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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/372,531 | 08/11/1999 | WERNER BOHNSTEDT | 534P007 | 1518 |

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EXAMINER

DOVE, TRACY MAE

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/372,531

Applicant(s)

BOHNSTEDT ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-8 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-8 and 11-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

This Office Action is in response to the communication filed on 9/9/03. Applicant's arguments have been considered, but are not persuasive. Claims 1, 3, 5-8 and 11-15 are pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/9/03 has been entered.

Double Patenting

Applicant is advised that should claim 5 be found allowable, claim 6 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7 and 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Bohnstedt, US 5,776,630.

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Bohnstedt teaches separators for use in accumulators (batteries) having longitudinal and transverse ribs. The separators are preferably provided in the form of rolls with the rib structure preventing a permanent distortion of the separators. See abstract. The separators are provided at least on one side with a pattern of longitudinal [elongated vertical rib] and transverse ribs [plurality of studs] which increases the rigidity of the separators. The separators are microporous sheets and are normally provided at least on one side with longitudinal ribs which should prevent the direct contact of the separator sheet with the positive electrode plate (ribs on inner surface of the pocket). The separators generally consist of a thermoplastic material and are formed into pockets, into which the positive or negative electrode plate is inserted. See col. 1, lines 5-23. The separators enable the charging gases to escape rapidly and in a straight line. The separators should preferably be provided in the form of rolls which are simple to handle and which can easily be further processed to form pockets (col. 1, lines 61-64). Preferred materials for the separators include polyvinyl chloride, polyethylene and polypropylene. The separators are preferably manufactured with the addition of inorganic fillers such as amorphous silicic acid (col. 2, lines 10-18). Both the longitudinal and transverse ribs are located in the center area of the separator. The longitudinal ribs are continuous and 2-4 longitudinal ribs are contained in the center area of the separator (see the figures). The longitudinal and transverse ribs can have both a round and an angular cross section with equal-sided trapezoidal sections (truncated pyramids) being preferred (col. 2, lines 58-60). The ribs may also form a herringbone pattern (col. 2, lines 38-47). The longitudinal and transverse ribs are integrally formed of the same material as the separator (col. 2, lines 61-67).

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Note the specification states on page 6 that "the studs may have any suitable shape" including "the form of a plurality of non-continuous, broken ribs". The term "studs" refers to "elevated areas rising above the separator sheet and having the form of solid bodies".

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-8, 11, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wells, US 2,117,382 in view of Linden, Handbook of Batteries (Figure 24.16 and page 24.29).

Wells teaches a storage battery (i.e., lead acid battery) having a microporous separator. The separator may be formed of any suitable separator material which is pervious to the electrolyte and inert in the battery. Generally, the separator is made in whole or in part of porous initially plastic molded material, with microporous rubber (resin material) being preferred (col. 2, lines 26-35). One side of the separator sheet is provided with isolated lugs (studs) of square, round, diamond or other shape uniformly spaced both horizontally and vertically or elongated members forming in effect staggered discontinuous ribs (studs) all of which are so shaped as to prevent the piling up thereon of active material which may be shed from electrode plates or to prevent the trapping of gas bubbles (col. 1, lines 37-45). The isolated projections are adapted to engage a positive plate of the storage battery (col. 1, lines 51-54). Wells teaches that it may be

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desirable that separators having discontinuous lugs or ribs be provided also with continuous vertical ribs (col. 4, lines 24-26). The separator may have a vertical continuous rib in the center area of the separator sheet (col. 4, lines 28-37 and Figure 14). Separators may be provided with two or more continuous vertical ribs (col. 4, lines 45-49). The continuous vertical ribs may be porous and may be molded or formed integral with the body of the separator the same as the discontinuous lugs or ribs, or they may be formed of porous or non-porous material vulcanized or otherwise secured to the face of the body of the separator. In any event, these vertical continuous ribs are adapted to engage the face or side of the adjacent battery plate the same as the isolated lugs or discontinuous ribs, and therefore will be of the same height (col. 4, lines 50-60).

Wells does not explicitly state that the separator sheet is a pocket separator.

However, Linden teaches that the simplest lead acid battery consists of one negative plate, one positive plate and one separator between them. Most practical cells contain about 3-30 plates with separators in between. Individual separators are generally used. The use of "envelope" (pocket) separators, which surround either the positive or negative plate, or both, is becoming more popular to facilitate production and to control lead contamination during manufacture (page 24.26 under "Assembly" heading). Linden teaches separator envelopes encapsulate plates to prevent shorting and vibration damage (Figure 24.8).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the skilled artisan would have known that pocket separators are commonly employed in lead acid storage batteries. Wells teaches that individual separators are used to isolate the positive plate from the negative plate (Figure 2).

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One of skill in the art would have been motivated to use a pocket separator for the individual separator of Wells because a pocket separator encapsulates the plates to prevent shorting and vibration damage (see Linden). Furthermore, Linden teaches that both individual separators and pocket separators are well known for use in lead acid storage batteries. Wells teaches that a sheet or strip of the separator of indeterminate length and convenient width will be formed and from this sheet or strip separators will be cut to size (col. 3, lines 8-11). Thus, the skilled artisan would have been able to determine a proper size to be cut in order to form a pocket separator. A separator would have been folded around an electrode plate in order for the separator to “surround” the plate and form the envelope, as discussed by Linden.

Regarding claims 11 and 12, Wells teaches the isolated projections (lugs/ribs) are adapted to engage a positive plate of the storage battery (col. 1, lines 51-54). Thus, the projections must be provided on the inside of a pocket separator. When the separator sheet of Wells is folded to form a pocket, the continuous vertical rib (see Figure 14) is located in the bottom edge area of the separator pocket.

Allowable Subject Matter

The indication of allowable subject matter (claim 8) has been withdrawn.

Response to Arguments

Applicant's arguments filed 3/31/03 have been fully considered but they are not persuasive.

Bohnstedt

Applicant argues the transverse ribs of Bohnstedt have a length of at least 8 mm (0.8 cm) since the transverse ribs fill the gap between two longitudinal ribs that are spaced apart 8-15

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mm. Thus, Bohnstedt does not disclose or suggest a plurality of studs having any of the shapes recited in claims 1, 13 and/or 15. However, Examiner disagrees with Applicant's analysis of the Bohnstedt reference. Specifically, the reference does not state the transverse ribs must intersect the longitudinal ribs. Bohnstedt teaches the transverse ribs may form a herringbone pattern (see attachment). Thus is Bohnstedt teaches the transverse ribs may have a length of at least 4 mm (0.4 cm). Bohnstedt discloses the transverse ribs may form groups of parallel ribs which groups amongst themselves are at angles of approximately 90° to $\leq 80^\circ$ to each other as is known for example from the so-called herringbone pattern(col. 2, lines 43-47). Bohnstedt teaches the rigidity of the separator can be increased or reduced by varying the transverse rib dimensions and spacing (col. 2, lines 52-54). Furthermore, Bohnstedt discloses the transverse ribs may have a trapezoidal shape (truncated pyramid).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).



Tracy Dove
Patent Examiner
Technology Center 1700
Art Unit 1745

October 23, 2003